

APPENDIX A

APPENDIX
SECTION SS HEADSTONE REALIGNMENT

C.1. Purpose:

C.1.1 The Department of Veterans Affairs, National Cemetery Administration honors veterans with a final resting place and lasting memorials that commemorate their service to our Nation. National cemeteries are national shrines. The standards of maintenance, appearance and operational procedures performed by the contractor at this cemetery shall reflect this nation's concern for those interred there. For this reason, the contractor's strict adherence to the specifications shall be required and shall be essential.

C1.2 The Contractor shall provide all labor, supervision, equipment, materials and supplies to remove, raise, realign, reset, and clean designated upright headstones; renovate designated sections of turf; and installed control marker monumentation at Mountain Home National Cemetery, Mountain Home, Tennessee.

C.1.3 Summary of Work:

The contractor will remove, clean, raise, realign and reset designated upright headstones/markers and floral vases that are already in place, establish gravesite control monumentation, and renovate designated sections of turf (to include border areas, the area from roadways/fence to interment area).

C.1.4 The contractor shall provide all supervision, professional advice/guidance, labor, parts, materials, equipment, and personnel, to provide these services.

C.2 Cemetery Location: These services will be performed at:

Mountain Home National Cemetery
P.O. Box 8
Mountain Home, TN 37684

C.3 General Requirements:

C.3.1 Site Manager: A "Site Manager" provided by the Contractor shall be at the work site whenever work is being performed. The "Site Manager" must have a minimum of five (5) years experience as a direct supervisor of a commercial landscaping operation that included surveying, soil excavation, and site construction in industrial, commercial or public sites. The "Site Manager" will ensure all specifications are being met, ensure contract work does not conflict with ceremonies and funerals, and ensure employees are adequately supervised and proper conduct is maintained. At all times when any performance of the work at the site is being conducted by any employee of the Contractor or his subcontractors, the Contractor shall have a representative (this person may or may not be the "Site Manager") present who has the capability of receiving instructions in the English language, fluently speaking the English language and explaining the work operations to persons performing the work in the language that those performing the work are capable of understanding. The Contracting officer shall have the right to determine whether the proposed representative has sufficient technical and bilingual capabilities, and the Contractor shall immediately replace any individual not acceptable to the Contracting Officer.

C.3.2 Work Hours: Normal working hours are from 7:00 a.m. to 4:00 p.m., Monday through Friday. All work will be scheduled within normal work hours. Additional work hours may be authorized for the convenience of the Contractor upon approval of the COTR(s). However, the Government will not be responsible for any increases in Contractor costs due to overtime, shift differential, or holiday pay.

C.3.3 Contractor On-call Availability after Normal Work Hours: The Contractor shall establish and maintain a point-of-contact to receive calls from the COTR(s) after normal working hours. The point-of-contact shall be available on a 24-hour basis during weekends, Federal Holidays and after normal hours of operation. The Contractor is to provide phone, pager and/or cell phone numbers for after hour's situations.

C.3.4 Contractor Response Times:

C.3.4.1 During Normal Working Hours: The Contractor shall be prepared to shift workers and work areas as necessary to safeguard the cemetery and its visitors and restore the work area(s) to a safe condition. The Contractor shall respond to all normal working hours' requests made by the COTR(s) within 30 minutes of the initial notification.

C.3.4.2 After Normal Hours: After Hours requests warrant rapid response in order to safeguard the cemetery and its visitors and restore the work area(s) to a safe condition. The Contractor shall respond to all after normal hours requests made by the COTR(s) within one (1) hour of the initial call.

C.3.4.3 Calls by other Government employees other than the COTR(s) shall not be acted upon, but shall be referred to the COTR(s) for review. Repairs shall begin as expeditiously as circumstances allow and should normally be completed within (24) hours of the initial emergency call. The Contractor shall keep the COTR(s) fully informed of the situation and what action will be taken to secure and correct the situation.

C.3.5 Scheduled Ceremonies and events: A list of scheduled ceremonies will be provided the week prior to the event, and a list of scheduled funerals and other events will be provided the day prior to the service. The Contractor shall be responsible for staying abreast of all such upcoming events and when in doubt, shall contact the COTR(s) for clarification.

C.3.6 Disruption of ceremonies, funerals and other special events: The Contractor is responsible for ensuring that no contract work causes any funeral, ceremony, procession or visitation to be delayed, altered, or otherwise impacted in such a way that the dignity or security of the event is compromised.

C.3.7 Meetings: The Contractor shall coordinate with the COTR(s) on a regular basis to ensure that work is proceeding satisfactorily and that the work will not interfere with any scheduled ceremonies, funerals, or processions. Meetings will be scheduled at least as frequently as shown below and may be requested by either party at any time. Participants in these meetings are not limited to the Site Manager and COTR(s), but may include additional Contractor or Government Personnel as required.

Daily: To report on work completed, establish a work schedule and to ensure that no work is being performed at the immediate site of a scheduled interment or ceremony. These daily meetings are also

an opportunity for the Contractor to ask questions and ensure he/she understands the off-limit areas, which may vary, depending on the event.

Weekly: To propose work to be done during the coming week, receive the schedule of upcoming ceremonies, discuss work progress and other items as appropriate.

C.3.8 Record Keeping And Reporting: The Site Manager or his designee shall provide the COTR(s) with weekly written accurate reports identifying work completed during the past seven days including the following: All upright headstone/markers raise/realigned, floral vases removed/replaced, the square yards of turf renovation (gravesite renovation) shall be recorded per gravesite location, and a proposed plan of work for the upcoming week.

C.3.9 Licenses: Permits; Vehicle, Liability and Workman's Compensation Insurance: The Contractor shall be responsible for obtaining all necessary and current licenses, permits, vehicular insurance and registration, Workman's Compensatory Liability Insurance, property liability insurance etc., prior to the start date of this service. The contractor shall provide the Contracting Officer copies of these policies before commencing work.

C.3.10 Utility Location: Prior to commencing any excavation or turf removal operations, the Contractor shall confirm the location of any utilities in the work area. Utilities include potable water systems, irrigation systems, electrical power, gas, and water and sewer lines. A utility locator company may be brought in to assist in this process at the sole expense of the Contractor.

C.3.11 Installed Irrigation System: Cemetery personnel will test and demonstrate to the Contractor the irrigation system prior to the start of work in any area. This inspection shall be documented in the weekly work report. (*Note: During extreme drought conditions or other situations where water is not readily available on-site, contractor must secure other water sources and supply needed water by Water truck or other means of contractors choice at contractors expense.)

C.3.12 Contractor Equipment: The Contractor shall not operate trucks, tractors, and other heavy equipment in excess of five tons on any turf area except when authorized in writing by the COTR(s).

C.3.13 Erosion Control: Contractor shall install and maintain erosion control material/methods to meet local requirements. Copies of these requirements may be reviewed by contacting the COTR(s).

C.3.14 The Contractor shall provide adequate warning devices, signage, barricades, guards, flagmen or other necessary precautions, as determined by the COTR(s) for the protection, safety, and warning to all pedestrians and vehicular traffic within the area. At least two signs will be provided and erected by the Contractor on the perimeter of the burial section being worked on to indicate to the public of work in progress. Signs will have the following wording: "CAUTION: HEADSTONE/TURF RENOVATION! INQUIRE AT OFFICE.". Signs are to be aluminum, 12" height, 18" width, 2-inch black letters on white background, mounted on a post with the top of the sign 48" from the ground surface.

C.3.15 The Contractor is responsible to ensure that all work shall be done in a manner that safeguards all VA visitors, employees, and public. The Contractor shall be solely responsible for any and all actions initiated and/or completed by his/her employees. Furthermore, the contractor and his/her employees shall have a clear understanding of, and be sensitive to, such environmental issues as ground water contamination, wetlands, etc., and be consistent and fully compliant with all applicable Federal, State laws, ordinances, Right-to-Know laws, EPA guidelines, and regulations.

C3.16 The Cemetery Director/COTR will have the right to stop work pending weather conditions at any time. This is required to maintain the dignity of the cemetery and the appearance of the grounds.

C3.17 The Contractor shall schedule an on-site session(s) with the COTR(s) to review site conditions; handling, numbering, placement and alignment of upright headstones/markers and floral vases; and any other Contractual requirements as determined by either the Contractor or COTR(s) prior to beginning work.

C.4 Work Scheduling:

C.4.1 Upon receiving Notice To Proceed (NTP) under this contract, the Contractor and Site Manager shall contact the COTR(s) to visit the site, plan the work and determine a completion date.

C.4.2 In planning the work and establishing a performance schedule, the following standards shall apply:

C.4.2.1 Approximately 40 headstones/markers per day.

C.4.2.2 Approximately 3000 sq. ft. of sod per day.

C.4.2.3 All contract work **MUST** be completed as required under this contract in the Burial Section/Border Areas (designated on the contract drawings and provided to the Contractor by the Contracting Officer and/or COTR.

C.4.2.4 The contractor shall provide a schedule of establishment of the permanent gravesite control monumentation which is described by paragraph C.5.6.1. below. Refer to **Attachment B** for a detail of the permanent gravesite control monument.

C.4.2.5 All sod renovation/work shall be performed during the active growing season (time periods) of the turf/grass. All sod installed after September 15th and before April 1st will not be inspected or accepted by the COTR until the following spring green-up/growing season has began and the sod has rooted and sustained no damage from the winter. At this time the COTR will inspect the sod sections and accept or not accept said sections.

C.4.3 Work Activity Sequence: In burial sections where work consists of Upright Headstone Raise/Realign, Cleaning, and Surface/Turf Renovation -- The Contractor shall submit proposed sequence of work activities to COTR for approval prior to starting work. Surface/Turf renovation work will typically occur either in conjunction with or prior to specified upright headstone raise and realign work in order to achieve the specified requirements for flowing precision uniformity of headstone markers with the leveled burial section surface terrain. The Contractor shall create an as-built map showing

specific location of each individual headstone/marker to facilitate precise headstone/marker reinstallation in the correct location.

C.4.4 Due to the national significance of the Cemetery, the Contractor shall, upon coordination with the COTR(s), be prepared for work stoppages around National Holidays or other ceremonies.

C.4.5 Contractor shall be prepared to return to work as soon as a ceremony is completed or on the next working day in the case of a National Holiday, with the exception of Memorial Day.

C.4.6 Work shall not be performed for a period around the Memorial Day holiday.

C.4.6.1 This shut down period shall begin on the Friday, two weeks prior to Memorial Day and work shall recommence on the Monday following Memorial Day.

C.4.6.2 The exact dates of this shutdown period shall be determined by the COTR(s).

C.4.6.3 Prior to departing the work site(s) for the Memorial Day shut down period, the Contractor shall return the work area(s) to a level of completeness determined by the COTR(s).

C.4.7 Marking of Gravesites: To allow for visitation by the public during weekends and Federal Holidays, all gravesites under this contract must be marked with the gravesite's permanent upright headstone marker, by no later than 4:00 PM every Friday and remain until the following Monday or until that time they are required to be removed by the contractor in order to perform work, (If Monday is a Federal Holiday, then the gravesite's permanent marker will remain until at least Tuesday).

C.5 Headstone/Marker Realignment, Resetting, Backfill:

C.5.1 Overview: This section outlines Upright Headstone/Marker realignment requirements. Raise, Lower, Realignment, Reset, Clean and Backfill services consist of extracting, resetting, aligning, backfilling and tamping/compacting upright headstones that are already in place which have shifted out of vertical and/or horizontal alignment and plumb, as well as inventorying and assuring accurate placement of gravesites at the National Cemetery. The Contractor shall provide all supervision, professional advice/guidance, labor, parts, materials, equipment, and personnel necessary to provide the services defined herein.

C.5.2 Headstone/Marker Locations: Headstone/marker locations requiring adjustment, realignment, resetting and backfill shall be Section SS.

C.5.3 To eliminate any chance of a headstone or marker being placed on the wrong gravesite during the course of the raise and realignment process, it is now standard NCA policy that headstones are not to be physically removed from the gravesite. The following procedures will be followed by the Cemetery Director, COTR, and the contractor before the raise and realignment process begins.

C.5.3.1 The contractor's Superintendent (or his designee) and the COTR shall conduct a joint gravesite inspection and verification prior to the removal of any upright headstones, flat markers and private headstones to document the location and accuracy of all existing conditions. The COTR will provide a printout of the burial records (BOSS) for this purpose with the following data fields: Section, Row, Site Number, First and Last name of the deceased. Next to each burial record, the COTR and Contractor shall initial if the burial record in BOSS is consistent with what is shown on the gravesite headstone. All inconsistencies will be noted for further investigation. Upon completion of this joint survey, both the contractor's Superintendent and COTR shall certify the accuracy, as noted and initialed, by signing the burial record printout. The original inspection and verification form shall be maintained by the Cemetery Director. Copies of the inspections and verification form will be given to the contractor and COTR for their official contract files.

C.5.3.2 Upon completion of the resetting and realignment of the headstones and markers, contractor's Superintendent and COTR will re-inspect and verify the accuracy of the placement of headstone and markers on the correct gravesite using the same printout that was used for the initial inspection. Upon completion of this second joint survey, both the contractor's Superintendent and COTR shall certify the accuracy by re-signing the burial record printout.

C.5.3.3 The contractor shall protect all headstones and markers from damage at all times. The Contractor shall elevate the headstones and markers off of the ground during the realignment process in order to protect them from damage or being discolored from dirt or soil. Contractor shall submit transmittals to the COTR on the method of elevating headstones and markers for approval.

C.5.4 Phasing and Work Sequencing: All work is to be accomplished in a sequential manner, with work limited to no more than six (6) burial rows at any given time in order to minimize overall disruption to the cemetery. Requests to work on more than three (6) rows at a time may be submitted to the COTR for approval. Approval/disapproval will be based on the impact to the cemetery operations and the progress and workmanship of the contractor, as determined by the COTR. Work cannot begin in subsequent rows until such time that work has been completed in prior areas. Submit proposed project work schedule sequence for COTR review and approval prior to start of project.

C.5.5 Record Keeping and Reporting: The Contractor's Project Manager Designee shall provide the COTR(s) with weekly written accurate reports detailing the section and range of graves in that specific week. These lists will be provided on not less than a weekly basis, and shall identify all of the above work that took place within the previous seven calendar days. Upon request, the Project Manager will also provide a plan of action for the upcoming week, regarding headstone/marker locations and specific areas where work is being scheduled to occur.

C.5.6 Upright Headstone Specifications: Raise, lower, realign, reset, and backfill of upright headstones shall be accomplished as follows:

C.5.6.1 Standard upright marble headstones are approximately 42 inches long, 13 inches wide, 4 inches thick, and weigh approximately 230 pounds. Older Civil War type upright marble headstones are typically around 35-1/2 inches long, 9-1/2 inches wide, 4 inches thick and weigh approximately 140 pounds, and 6x6 unknown markers are 24 inches long.

C.5.6.2 All temporary markers, floral, commemorative, buried permanent floral vases, or other types of decorations and arrangements causing interference with the raise and realignment of upright headstone operation shall be carefully, and in an orderly manner moved from, and per completion of work, moved back to all gravesites by the Contractor. Prior to removal, the Contractor shall verify the numbering sequence and location of the headstone and associated decorations by using tags and a permanent ink marker indicating from which grave the item was removed.

C.5.6.3 Headstones will be removed from their sockets by using wooden, and or metal clamps. If metal clamps are used the area that contacts the headstone must be protected with a rigid fabric that will prevent damage to, and marking of, the headstone. Clamps may be attached to a Bob Cat or similar machine to extract headstone from socket. Extreme care will be used not to scratch or damage headstones in any manner. Contractor is responsible for restoring all damages caused to turf and headstones during performance of this work. Headstones are to be raised, realigned, and lowered in the following manner:

C.5.6.3.1 All headstones are to be extracted from the socket. ALL sockets are to be re-dug by hand or mechanical means to allow for a 3" perimeter around all sides of the headstone and to a sufficient depth so that a 3" compacted base can be established, allowing the stone to extend out of the ground at a height of 25" to the top of the arch on the standard headstone. (Note: In areas where smaller than standard size headstones may occur, Contractor shall coordinate specified measurements and dimensions of required work with COTR.)

C.5.6.3.2 Moistened Crushed Limestone Base Material (graded aggregate sizes ranging from crushed fines up to ¾" maximum) will be placed around all sides of the headstones and in the bottom of the socket before being thoroughly tamped to full compaction at each three (3) inch vertical interval, leaving the last 3 inches at the top to have tamped topsoil. The government will not provide any base material. The Contractor is required to provide these materials. (Note: Moist Class II Road Base may be considered as an alternate. Contractor shall obtain approval from the COTR for any substitute base material).

C.5.6.3.3 Straight Rows: Headstones shall be set vertically plumb in all directions, in all cases in a line vertically and laterally, and where possible transversely (coordinate with COTR), with headstones of other graves using a top string, a back of headstone string line, and a side of headstone string line. **Maximum vertical, lateral, and transverse tolerance of any headstone off the alignment string lines and/or marks shall be 1/8" or less.** All measurements and string line set ups shall be taken from established section layout control points, **not from previously set headstones.** In situations whereas there is no monumentation, a top string shall be centered over the arc of the headstone for vertical alignment. The consistency of the row will be used as the medium. Raised and realigned headstones in all soil and terrain shall be firmly in place so that headstones are rigid with no give or play.

C.5.6.3.4 Irregular Terrain: When sloping and uneven ground conditions exist in burial sections, all headstones and markers will be set at field approved heights and levels through the use of multiple keystones, back strings, top strings, and side strings to provide a flowing transition through uneven

terrain. Field guidance will be provided by the COTR upon the written request from the Contractor. The established field guidance will overrule the height requirements that will be found in other parts of this specification.

C.5.6.3.5 In cases where headstone sockets need to be realigned/shifted, and/or re-dug, the headstone sockets (holes) to receive headstones shall be dug by hand and/or mechanical devices to a sufficient depth so that 25 inches of the headstone is extending from the topsoil level of the sod to the top of the arc on the headstone. Contractor shall not dig a headstone socket wider than twelve (12) inches, twenty (20) inches in length, or exceed a depth of 20 inches that may cause the headstone to settle below height requirement.

C.5.6.3.6 The measurements between rows of headstones and headstones within each row may differ from one section to the next, discuss with COTR where this is found to occur. These measurements must be adhered to as closely as possible. Some variances may be allowed in order to keep a uniform appearance of headstones being aligned. Headstones will be accurately and precisely reinstalled on the correct gravesites with the utilization of temporary grave plotting maps, existing permanent control markers, and temporary Contractor installed control markers accurately and precisely installed at the ends of each gravesite row.

C.5.6.3.7 The realign crew is to start on a row of headstones close to the center of the section to be realigned. Headstones are chosen to be "key" stones. These keystones are ones that are visibly in line with the majority of the rest of the headstones in the row, and are as close as possible to the proper measurements for that section of headstones. "Key" stones are to be chosen and utilized at a maximum of every 10th headstone (or more frequently in areas of rolling terrain). These keystones are then aligned by leveling front and back and side-to-side, and raised or lowered to a height of 25 inches above topsoil level (this includes topsoil on sod).

C.5.6.3.8 At the start of work in each burial section, the first row of reset/realigned headstones in each burial section is to be inspected by COTR for appearance, spacing, depth, alignment, plumbness, height, accuracy, and smoothness in grade transition. No further setting of headstones shall be done until this first row has been inspected and accepted by the COTR. It is the Contractors responsibility to notify the COTR 24 hours in advance of when each of these inspections will be needed.

C.5.6.3.9 Tape measures and Heavy strings or lines must run along the backs, sides, and tops of these keystones. The Contractor shall mark the lines with the proper measurements for the section being aligned. All remaining headstones in the row are then aligned along the strings front to back and side-to-side even with the measured marks on the line. Each headstone is leveled and plumbed front to back and side-to-side keeping the back of the headstone along the string and the side of the headstone along the measured mark. Maximum vertical, lateral, and transverse tolerance of any headstone off the alignment string lines and/or marks shall be 1/8", or less. Each headstone is also raised or lowered as necessary to ensure a uniform measurement of 25 inches above topsoil level to include topsoil of sod. The headstone is then aligned along the string front to back and side-to-side even with the measured mark on the line. The headstone is leveled and plumbed front to back and side-to-side keeping the back of headstone along the string and the side of the headstone along the measured mark.

C.5.6.3.10 The alignment of the headstones shall be checked frequently during this process because the tamping may move the headstone out of level or off the mark on the line. This process of raising and realigning is repeated for each row of headstones. Upright headstones in all completed work areas shall be firmly set and anchored in place with no movement from forces subjected by the COTR.

C.5.6.3.11 Any upright headstones broken or damaged by the Contractor shall be reported to the Cemetery Director and COTR by close of business each working day in order that the grave can be properly marked. The Contractor shall be responsible for the cost of the headstone replacement. All headstone replacements must be coordinated with the COTR. Any grid or sectional monuments disturbed, displaced or broken shall be replaced by the Contractor at his cost. All grid or sectional monuments disturbed, etc., shall be properly reset by a licensed land surveyor at Contractor's expense. Curbs, roads, walks, turf, trees, utilities, etc. existing above and below the ground that are damaged or disturbed by the Contractor during performance of contract work shall be repaired at the expense of the Contractor. Repairs to the above shall be corrected by the Contractor within fourteen (14) calendar days, unless otherwise agreed to with the COTR.

C.5.7 Guarantee: The Contractor shall guarantee all work for a period of one (1) year after final inspection and acceptance of the entire project by the Government. Any headstone adjust, realign, reset, and/or backfill workmanship that does not meet the specified requirements (including specified tolerance requirements) at the end of this guarantee period shall be reworked, adjusted, and corrected by the Contractor at no additional cost to the government. Work performed under the Guarantee shall be corrected within ten (10) workdays from receipt of notification or as directed by the COTR.

C.6 Headstone Cleaning: The VA is the authority on determining what is clean and what is not clean. The definition of a "clean stone" is that the stone has no dirt lines or watermarks and no visible signs of fungi. The cleaning shall consist of the removal of stains, dirt, grass, or fungi leaving the marker undamaged and in a clean, acceptable condition. Cleaning shall be completed with the use of a high-pressured washer (not to exceed 800 PSI) and an acceptable cleaning agent approved by the COTR(s) that does not harm the grave marker and/or turf. Cleaning shall be completed after raise and realignment of headstones and placement of turf/sod. The Contractor shall be responsible for any turf or sod damaged during the cleaning process.

C.7 Turf Renovation (Gravesite Renovation):

C.7.1 Vegetation Removal: Existing turf is to be sprayed with a short acting herbicide designed to eliminate turf and weeds (i.e. "Round-up" or equivalent). The application shall be applied by a licensed applicator to ensure appropriate rates of application and other State regulated requirements.

C.7.2 Stripping Topsoil: Strip topsoil from within limits of work area. Topsoil shall be a fertile, friable, natural topsoil of loamy character and characteristic of locality. Topsoil shall be capable of growing healthy horticultural crops of grasses. Stockpile topsoil and protect as directed by COTR or designee. Eliminate foreign materials, such as dead grass, weeds, roots, stones, subsoil, frozen clods, and similar foreign materials larger than 25 mm (1 inch) in any dimension from topsoil that will be used in final

grading. Topsoil work, such as stripping, stockpiling, and similar topsoil work shall not, under any circumstances, be carried out when soil is wet so that tilth of soil will be destroyed. Topsoil removed from the work area may be stored in a temporary on-site location designated by the COTR.

C.7.3 Lines and Grades: Area must be tilled, graded and compacted to a level to provide a flowing transition through existing terrain. A Registered Professional Land Surveyor or Registered Civil Engineer shall establish lines and grades for approval by COTR and designee. Grades shall conform to grades and elevations to provide a smooth transition at curbs, trees, planters and uninterrupted drainage flow into existing drains. Contractor shall notify COTR of any differences before requesting approval of lines and grades. Subsequent to establishment of lines and grades and COTR approval, Contractor shall be responsible for any additional cut and/or fill(from sunken graves) required to ensure that site is graded to insure that surface water drainage will drain to existing storm drains.

C.7.4 Filling and Back filling: Do not fill or backfill until all foreign materials have been removed from excavation. For fill and backfill use excavated materials and top soil as applicable. Do not use unsuitable excavated materials such as topsoil, construction materials and material subject to decomposition, clods of clay and stones larger than 1 inches, organic materials including silts which are unstable, and inorganic materials including silts, too wet to be stable.

C.7.5 Compaction: Compact with approved tamping rollers, sheep foot rollers, pneumatic tired rollers, steel wheeled rollers, or other approved equipment (hand or mechanized) well suited to soil being compacted. Do not operate mechanized vibratory compaction equipment, which may damage existing liners or caskets. Subgrade must be thoroughly tamped to compaction.

C.7.6 Topsoil: Topsoil shall be a well-graded soil of good uniform quality. It shall be a natural, friable soil representative of productive soils in the vicinity. Topsoil shall be free of admixture of subsoil, foreign matter, objects larger than 25 mm (one inch) in any dimension, toxic substances, weeds and any material or substances that may be harmful to plant growth and shall have a pH value of not less than 5.0 nor more than 7.5. Testing for pH will be required by an approved laboratory. Copies of the pH tests shall be furnished to the COTR(s) PRIOR to topsoil being placed. Amend topsoil not meeting the pH range specified by the addition of pH Adjusters. Top-dress is to be organic matter, weed free consistent with irrigation requirements to promote healthy grass. If sufficient topsoil is not available on the site to meet the depth as specified herein, the Contractor shall furnish additional topsoil. At least 10 days prior to topsoil delivery, notify the COTR or designee of the source(s) from which topsoil is to be furnished. Obtain topsoil from well-drained areas.

C.7.7 Installation of Topsoil: After tilling the soil for bonding of topsoil with the subsoil, spread the topsoil evenly to a minimum depth of four (4) inches. Incorporate topsoil at least 2 to 3 inches into the subsoil to avoid soil layering. Do not spread topsoil when it is excessively wet or dry. Correct irregularities in finished surfaces to eliminate depressions. Protect finished topsoil areas from damage by vehicular or pedestrian traffic. Complete lawn work only after areas are brought to finished grade. The areas within the drip lines of existing trees are not to be tilled at a depth greater than three inches or backfilled not to exceed four inches from existing grades. Contractor must protect all trees, shrubs and plants.

Exceptions must be approved by COTR. Incorporate fertilizers and lime into the soil to a depth of at least 100 mm (4 inches) as part of the finish grading operation. Immediately restore the soil to an even condition before any turf work.

C.7.8 Finish Grading, Sod and Sodding: Complete lawn works only after areas are brought to finished grade (approved by COTR) and all vegetation has been eradicated. Sod shall be certified sod as classified in the TPI Guideline Specifications to Turf Grass Sodding. Two applications of fertilizers are required, one prior to sod placement (use a starter fertilizer 5-10-15 at the rate of 10 pounds per 1000 square feet) and another application of fertilizer after the first mowing at 10 pounds per 1000 square feet. Prior to delivery of sod, the contractor shall have an interim inspection of the work area by the COTR and any discrepancies (grading, backfilling, headstone placement, etc.) shall be corrected prior to laying sod in the work area. Sod shall be delivered to the work site no more than one day prior to installation with a minimum of 1-1/2 inches of soil on bottom of sod being cut. Contractor shall make all necessary arrangements to protect delivered sod from excessive drying and wind damage. Sod shall be laid expeditiously without interruption, until the work area is completely sodded. Sod shall be cut and fitted around all headstones and other obstructions. Sod should only be laid/rolled over bare moist soil with pieces laid in a staggered brick-like pattern and edges fitted tightly together to avoid any open cracks. Rolling and watering thoroughly is required by the contractor to insure good contact with the soil for fast rooting. Sod will only be laid between the months of April and September 15th to allow for sod establishment before the dormant season for the turf. All sod installed after September 15th will not be inspected or accepted by the COTR until the following spring green-up/growing season has began and the sod has rooted and sustained no damage from the winter. At this time the COTR will inspect the sod sections and accept or reject said sections.

C.7.9 Sod around Trees: Care shall be taken not to damage tree roots. New sod will be laid no closer than 36 inches from tree trunk in a circular pattern. In instances where a greater diameter is required due to tree roots, prior approval shall be obtained from the COTR. Sod is to be installed in a circular pattern away from base of tree and surface root unless otherwise specified by the COTR.

C.7.10 Floral vases: After installation of sod, Contractor shall ensure that all floral vases are at their proper and marked locations and are at finished grade.

C.7.11 Guarantee: The Contractor shall guarantee all turf work for a period of one (1) year after final inspection and acceptance of the entire project by the Government. Any turf work that does not meet the specified requirements at the end of this guarantee period is to be reworked, adjusted, and corrected by the Contractor at no additional cost to the government. Work performed under the Guarantee shall be corrected within ten (10) calendar days after receipt of notification or as directed by the COTR.

C.8 Turf Establishment Period:

C.8.1 The Turf Establishment Period for each section shall begin no sooner than 21 days after the last piece of sod is laid in that section. After the 21 days the contractor can call for an inspection of said section by the COTR. After acceptance by the COTR, then the turf establishment period will

begin and shall be no less than 30 days after COTR acceptance. During the Turf Establishment Period the Contractor shall:

C.8.2 Water turf to maintain an adequate supply of moisture within the root zone. Apply water at a moderate rate so as not to displace the mulch or flood the plants and turf. During the Turf Establishment Period, the contractor shall be responsible for applying one quarter of an inch of water (1/4") twice a day.

C.8.3 Shall treat sod with a pre-emergence/post-emergence herbicide for weeds as well as treatment for insects and disease. Water, fertilize, over-seed, and perform any other operation necessary to promote the growth of grass.

C.8.4 Replant areas void of turf 0.1 m² (one square foot) and larger in area. Sod shall be considered acceptable if well rooted and sustained no damage.

C.8.5 Mowing will be required by the contractor when grass reaches 77 mm (3 inches) high. Mow to a 50 mm (2.0 inch) height and take no more than 1/3 of the grass at any mowing. Contractor will be responsible for the mowing until an acceptable stand of grass is provided and accepted by the government.

C.8.6 The contractor shall not be held accountable or responsible for damage to the renovated areas caused by cemetery personnel or other factors not controlled by the contractor.

C.9 Turf Maintenance Period:

C.9.1 After acceptance of the Turf Establishment Period, the Contractor shall maintain each section for 30 days. Maintenance shall include mowing the area when the grass reaches a height of 77 mm (3 inches). Mow to a 50 mm (2 inch) height and take no more than 1/3 of the grass at any mowing. Contractor shall be responsible for the health of the turf to include weed, insect and disease control.

C.9.2 The contractor shall be responsible for the health of the turf until final acceptance by the COTR and make all necessary corrective actions at no expense to the government.

C.9.3 The contractor shall not be held accountable or responsible for damage to the renovated areas caused by cemetery personnel or other factors not controlled by the contractor.

C.9.4 Continue mowing and irrigation until sod is 100% established and is accepted by the COTR.. Germinated weeds must be eliminated by spraying with a typical three-way broadleaf herbicide combination product or with a post emergence herbicide control of crabgrass or both if necessary to achieve 100% turf grass cover.

C.10 Clean Up and Repair Of Damaged Areas:

C.10.1 Upon completion of the work, the Contractor shall remove all debris, rubbish, and excess material from Cemetery Property.

C.10.2 A temporary storage site may be provided by the COTR for short-term storage (not to exceed two weeks).

C.10.3 At the end of each day the Contractor shall remove all debris from the work site and the cemetery. The Contractor shall ensure at all times that rubbish and trash generated by the Contractor is kept clear of vehicular and pedestrian traffic throughout the site. The Government shall not provide receptacle(s) for disposal of debris related to this contract. All unsuitable or unusable materials are to be disposed of offsite by the contractor.

C.10.4 The Contractor shall be responsible for cleaning any cemetery structures that are soiled or stained as a result of contractor's performance. The Contractor shall wash-down with water all soiled or stained structures and grounds at the end of each workday. No chemicals are to be used during the wash down. The Contractor shall bear all costs associated with washing and cleaning. Any such soiled or stained areas shall be brought to the immediate attention of the COTR prior to washing/cleaning.

C.10.5 In areas where planting and turf work have been completed, clear the area of all debris, spoil piles, and containers. Clear all other paved areas when work in adjacent areas are completed. Remove all debris, rubbish and excess material from the Cemetery.

C.10.6 The Contractor shall be responsible for replacement of any cemetery structure, to include: turf, curb, road pavement, headstone or marker, valve boxes, control markers, sprinkler heads, which is chipped, marred, damaged and/or ruined at the fault of the Contractor and shall bear all costs associated with replacement and reinstallation. Any such damage shall be brought to the immediate attention of the COTR prior to repair/replacement/installation.

C.10.7 At the Government's discretion, the Contractor shall either repair or replace the property, or reimburse the Government the full amount for all property damage(s). The Contractor shall be aware that Government property - beyond standard structures and equipment - also includes markers, monuments, trees, beds, and turf, i.e. - wounded trees or scalped turf, roads, curbs, potable water system as well as headstones/markers shall be repaired or replaced.

C.10.8 The contractor and COTR shall inspect the trees and shrubbery of a schedule renovation area prior to the start of the renovation and note all abnormalities or existing conditions. Another inspection will be conducted after the completion of the renovation and the contractor will make all corrective actions to any noted damage. A licensed arborist will complete all corrective actions to damaged trees.

C.10.9 Where existing or new turf areas have been damaged or scarred during planting and construction operations, restore disturbed area to their original condition.

C.10.10 The Contractor shall not operate trucks, tractors, and other heavy equipment on any turf or interment area except when authorized in writing by the COTR.

C.11 WORK ENVIRONMENT:

C.11.1 All work under this contract shall be performed primarily out-of-doors and personnel performing these services shall be exposed to wind, sun, cold, dampness, fog and rain. These conditions, may, at times, be extreme.

The contractor shall take all necessary precautions to protect his/her employees from the elements to the maximum practicable extent. No work shall be done when the ground is too wet or in an otherwise unsuitable condition for planting. Submit a written request to the COTR stating any special conditions and proposal variance.

C.11.2 Due to the sensitive mission of the cemetery, the work often requires contact with, and exposure to, grieving individuals. Contractor personnel must exercise and exhibit absolute decorum, courtesy, and respect while within the cemetery or at its perimeter or entrances. Inquiries from cemetery visitors shall be politely referred to Government cemetery staff. Gratuities of any kind are strictly prohibited.

C.12 CEMETERY RESPONSIBILITIES:

C.12.1 Locate the temporary gravesite control monumentation markers if any which are to be replaced by permanent gravesite control monumentation by the contractor under the above scope of work.

C.12.2 Test the irrigation system to assure proper operation.

C.12.3 Verify the location of all gravesites within the scope of work.

C.12.4 Provide temporary unimproved storage area (topsoil storage, etc).

C.13 CONTRACTOR-FURNISHED ITEMS AND RESPONSIBILITIES:

C.13.1 The Contractor is responsible for supplying all equipment, personnel, tools, supplies and materials necessary to perform the services required by this contract.

C.13.2 Contractor-furnished items necessary to perform work as required under this contract shall be furnished, maintained and operated by the Contractor and shall be consistent and fully compliant with all applicable OSHA, Federal, State, County, City laws, ordinances and regulations.

C.13.3 Materials and supplies procured for the performance of the contract by the Contractor shall be consistent and fully compliant with all applicable Federal, State, County, and City laws, ordinances and regulations.

C.13.4 Contractor Staging area shall be located and approved by the COTR. Contractor shall base operations out of this staging area, using it for materials and equipment storage, administration, employee toilets, trash dumpster area, employee parking, employee lunch/break area, etc.

C.13.5 The Contractor is responsible for the supply, maintenance and repair of all Contractor-owned equipment. This includes, minor maintenance/repair and minor operating parts for equipment such as lubrication, oil changes, spark plugs, gaskets, cotter pins/keys, electric extension cords, etc., to keep all equipment in good operational condition throughout the period of performance of this contract.

C.13.6 The Contractor is responsible for ensuring that all of its motor vehicles and equipment meet State inspection, safety, licensing, registration, and insurance requirements.

C.13.7 Electricity: In case the Contractor requires electricity while in performance of this contract, the Contractor shall provide and utilize portable generators as necessary to complete the work. If Contractor hookup to Cemetery's electrical distribution system is approved by COTR, Contractor is to provide all necessary connections and complete connection work in accordance with NEC requirements, and at no cost to the Government.

C.13.8 Water: The Contractor shall provide and utilize portable water tanks and/or water trucks as necessary to transport water to areas where needed in order to complete the work required by this contract. The Contractor is responsible for making connections to any water supply in accordance with regulations and shall install appropriate meter for monitoring usage if applicable. Contractor shall not obstruct normal traffic flow on adjacent roads while water is being obtained or dispersed.

C.13.9 Refuse Facilities: The Contractor shall provide his/her OWN refuse facilities of which will be located only in the COTR approved "Staging Area". Contractor shall not place dumpsters or refuse facilities in any other location at the cemetery other than the approved staging area. The Contractor is required to dispose of all debris and other waste materials generated by his/her work at a licensed off-site landfill unless otherwise directed by the COTR. The Government shall not provide receptacles for disposal of debris as a result of the services provided under this contract. In case of Hazardous Materials, the Contractor is required to obtain required disposal permits from the State regulatory agency.

C.13.10 Portable Chemical Toilets: The Contractor shall provide portable chemical toilets for use by workmen as necessary to comply with applicable OSHA requirements. These portable toilet facilities shall be kept clean and free of excessive odors, insects, etc. Portable toilet facilities will be located in the COTR approved Contractor Staging Area only - it is not permissible to locate portable toilet facilities in any other locations throughout the cemetery. Use of the permanent cemetery toilet facilities by workmen is strictly prohibited throughout the duration of this contract.

C.13.11 Only Contractor's equipment and supplies (property) required to perform work under this contract shall be stored at the Contractor's designated storage area at the end of each workday. No Contractor equipment maintenance repairs of any kind can be done on cemetery property without the prior approval of the COTR.

C.14 CONTRACTOR CONDUCT:

Contractor personnel shall:

C.14.1 Adhere to the following standards of dress, conduct, supervision and training while performing work on Government property. The COTR shall direct the Site Manager to remove from the site, any Contractor employee not adhering to these standards.

C.14.2 Be fully clothed at all times, to include upper garment to cover body from the waist to the neck and long pants. Garments that have a message, slogan or printing of any kind other than the Contractor's business attire are prohibited. Uniforms are acceptable.

C.14.3 Maintain a neat and professional appearance throughout its workforce, vehicles, equipment, and maintenance areas. If uniforms are used, they must be in unison among all employees.

C.14.4 The Contractor/personnel shall not engage in loud or boisterous behavior, angry outbursts or use profane or abusive language at anytime on Government premises. Playing radios and/or electronic games/devices, smoking or chewing tobacco products, shall only be done at lunchtime and in a designated work area.

C.14.5 Consume food and beverage only within areas designated by the COTR. Intoxication, and violence or criminal acts of any kind will not be tolerated - and is cause for immediate removal from Government property. Use or sale of intoxicating beverages and/or drugs is strictly prohibited.

C.14.6 Contractor employees shall only take breaks/rest periods and lunch breaks at areas designated by the COTR, not in the field. Misconduct shall form the basis for immediate contract enforcement action, to include immediate removal from the cemetery.

C.14.7 The Contractor shall be responsible to ensure that his/her employees are aware of all the terms and conditions set forth in the contract regarding their performance and conduct during the performance period of this contract.

C.14.8 The Site Manager shall re-direct employees away from an event in a timely fashion. If either the Site Manager does not do so or is not available, the COTR may then do so.

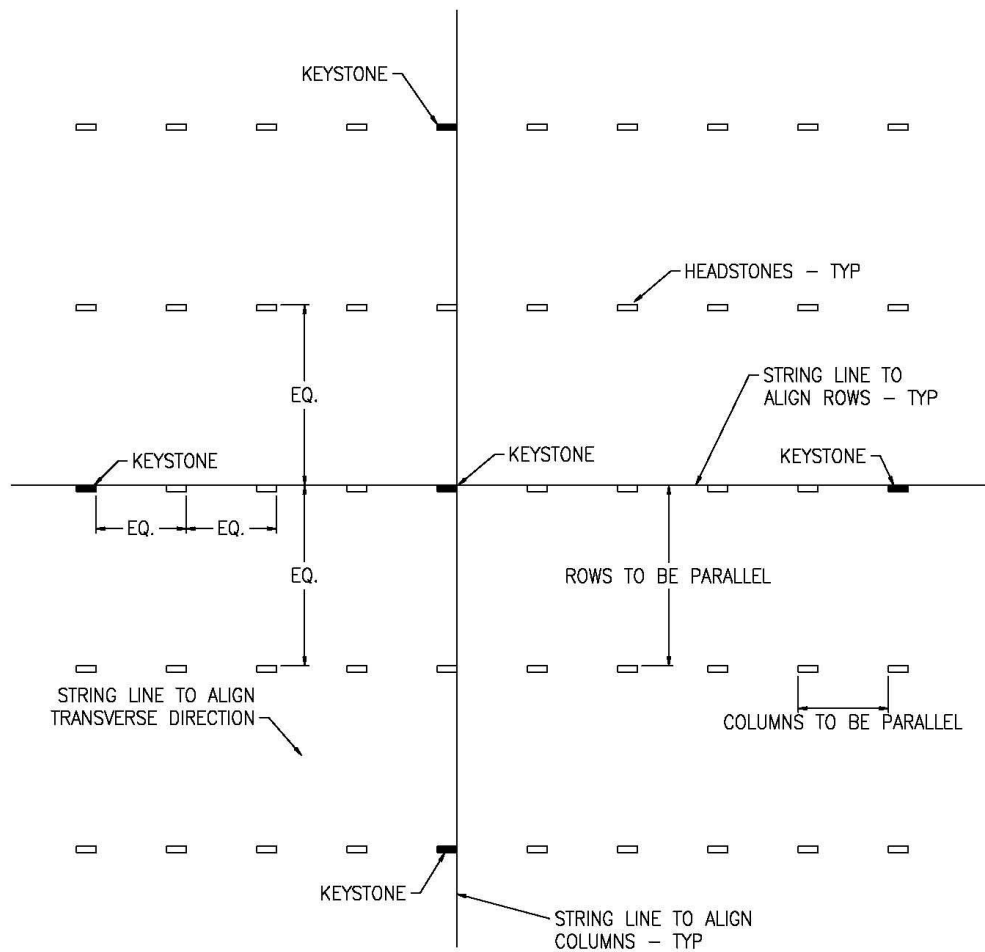
C.14.9 Contractor shall be responsible for training and safety precautions prescribed by OSHA regarding safety equipment and devices.

C.14.10 **NOTE: ANY VIOLATION OF ANY OF THE ABOVE LISTED, MAY RESULT IN THE TERMINATION OF THIS CONTRACT WITH POSSIBLE REPERCUSSIONS COSTS INCURRED, DEBARMENT, OR FINE.**

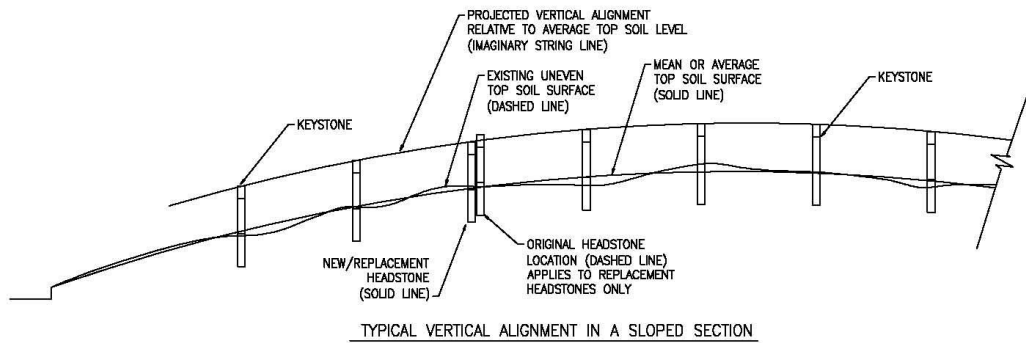
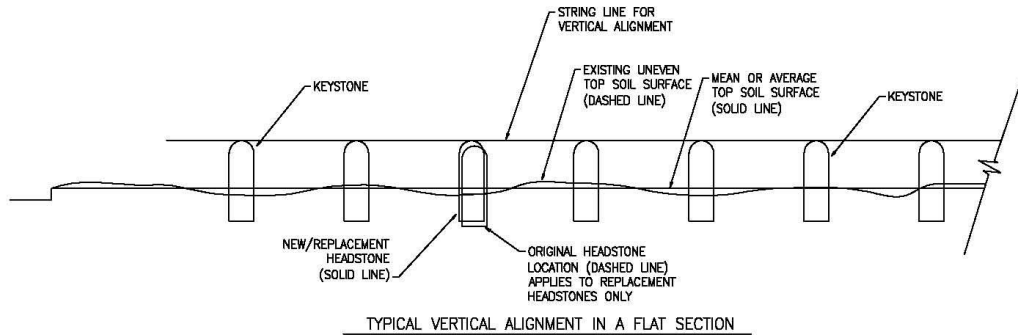
C.15 **SAFETY:** Any actions of the Contractor, must meet all safety requirements of Mountain Home National Cemetery's Safety Officer, Department of Veterans Affairs, OSHA, and the State. It is incumbent upon the Contractor to be familiar with these requirements. Copies of all referenced safety standards may be reviewed by contacting the Mountain Home National Cemetery Safety Officer. "Safety" shall also include the Contractor having a safety representative who maintains regular and routine contact with the Safety Officer of Mountain Home National Cemetery.

C.16 Attachments

1. Plan View Headstone Alignment
2. Elevation View of Burial Section Alignment
3. Figure 1, Headstone Installation Details
4. Attachment B, Typical Permanent Burial Gravesite Control Marker



PLAN VIEW HEADSTONE ALIGNMENT



ELEVATION VIEW OF BURIAL SECTION ALIGNMENT

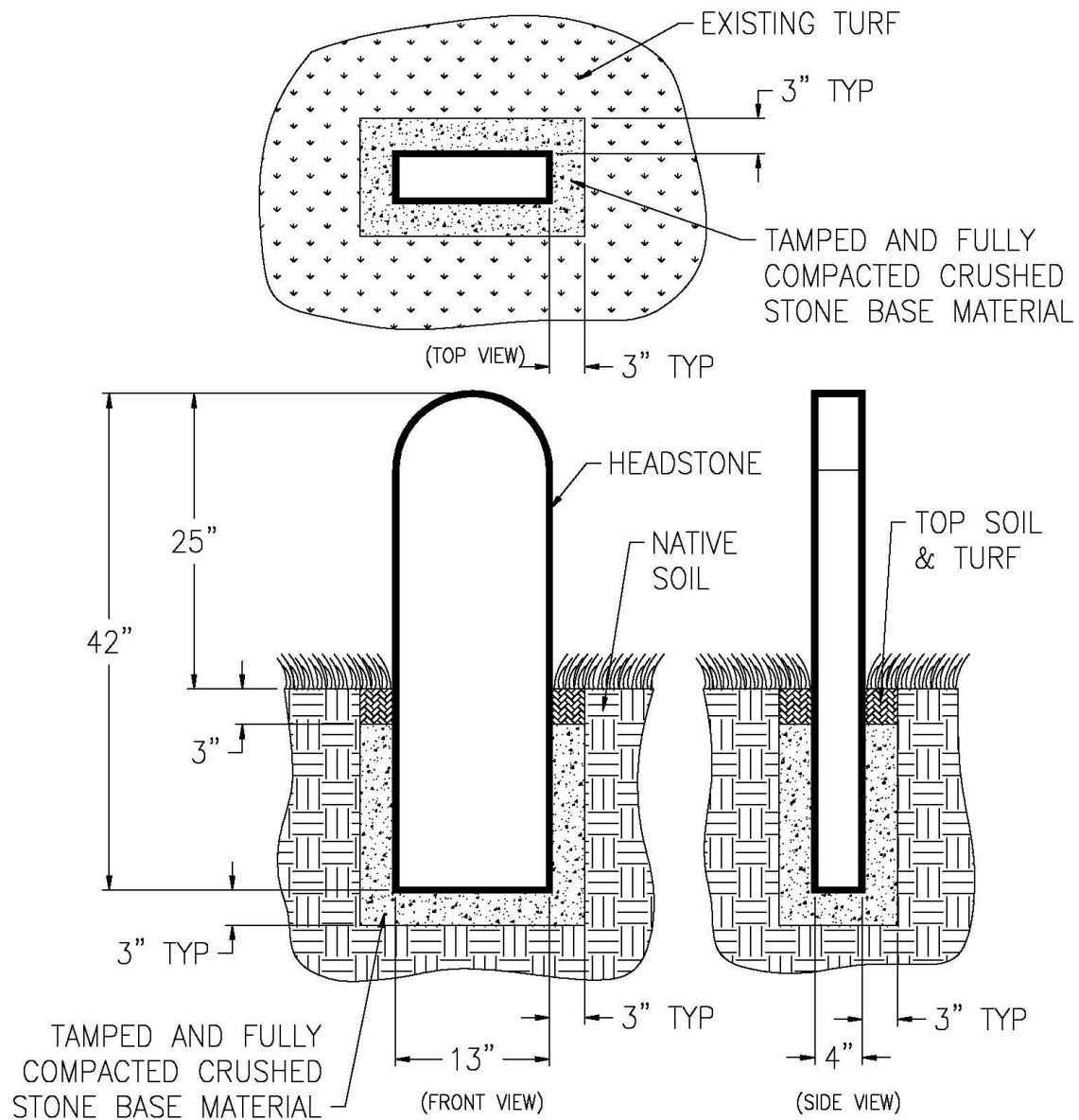
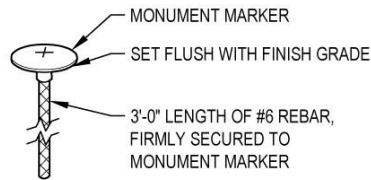
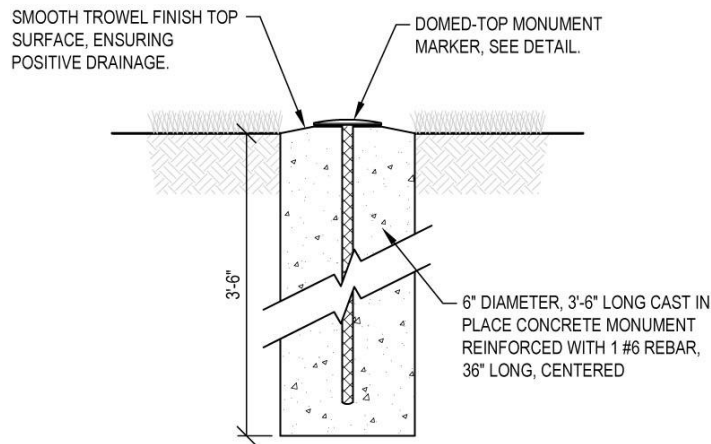
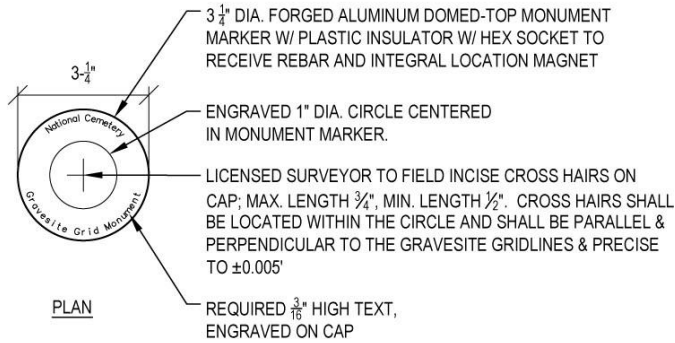


FIGURE 1
HEADSTONE INSTALLATION
DETAILS



ISOMETRIC



SECTION

NOTES:

1. ALL LAWN AND IRRIGATION LINES WITHIN THE BURIAL SECTION SHALL BE INSTALLED AND ACCEPTED PRIOR TO MONUMENT BASE PLACEMENT.
2. ALL LAWN AND IRRIGATION LINES DAMAGED DURING INSTALLATION SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE.
3. CENTER POINT OF BURIAL CONTROL MONUMENT GRID SHALL BE WITHIN ± 0.005 FT. OF THE POINT DESIGNED ON THE PLANS.

APPENDIX B



January 11, 2012

Anderson Engineering of Minnesota, LLC
13605 1st Avenue North
Plymouth, MN 55441

Attn: Mr. Michael Brandvold, P.E.
P: (763) 412-4017
F: (763) 412-4080
E: mbrandvold@ae-mn.com

Re: Review of Soil Conditions
Mountain Home National Cemetery
Crypt Expansion
Johnson City, Tennessee
Terracon Project No. E2115102

Dear Mr. Brandvold:

On December 6, 2011, Mr. John Reinert of Terracon visited the subject site with Mr. Mike Brandvold of Anderson Engineering and Mark Lodewyk of JJR to observe excavation of several exploratory excavations across the project site. The purpose of digging the pits was to observe soil conditions and compare the findings with the geotechnical engineering study prepared by others.

Test pit locations were selected by the design group. Figure 1, prepared by Anderson Engineering, depicts the approximate location of each of the test pits. The following paragraphs provide a narrative of the conditions encountered at each pit location. At some locations, the soil encountered was fairly consistent, and were composed of natural, residual soil. At other locations, fill materials composed of a variety of alternating layers of clay, silty and organic materials.

Test Pit #1 - (0 to 8 feet) 6 inches of topsoil followed by yellowish-brown elastic silt fill material to 3 feet, 2 inches of dark brown to black silt with gravel and alternating layers of red and yellowish-brown silty fill material to 8 feet. A boulder was encountered on the south side of the test pit from 7 feet to 8 feet.

Test Pit #2 - (0 to 10 feet) 4 inches of topsoil followed by alternating layers of yellowish-brown, red and dark brown layers of silty fill material.

Test Pit #3 - (0 to 10 feet) 4 inches of topsoil followed by red silty clay (Residual).



Terracon Consultants, Inc. 54 East Mount Drive, Suite 135 Clarksville, Tennessee 37006
P: (623) 486 8111 F: (623) 486 8054 terracon.com

Geotechnical

Environmental

Construction Materials

Facilities

Test Pit #4 - (0 to 6 feet) 3 inches of topsoil followed by 2.5 feet of yellowish-brown silty clay fill, another 2 inches of topsoil and yellowish-brown sandy silt to 6 feet (alluvium-west side of ravine).

Test Pit #5 - (0 to 10 feet) 4 inches of topsoil followed by red and yellow elastic silt (Residual).

Test Pit #6 - (0 to 9 feet) 8 inches of topsoil and roots followed by red silt to 4 foot (Residual) and red and yellow sandy silt with blocky structure and chert fragments from 4 feet to 9 feet.

Test Pit #7 - (0 to 9 feet) 2 inches of topsoil followed by red elastic silt to 9 feet (Residual).

After returning the soil samples to the laboratory, tests were performed on the soil to document several index properties. The following table summarizes the results. Additional information regarding each of the tests is attached with this letter.

Sample ID	Liquid Limit	Plastic Limit	Plastic Index	%>#4 Sieve	%>#200 Sieve	Max Dry Density ^a	Optimum Moisture (%) ^a	USCS
TP-3	61	32	29	97.6	86.2	89.5	30.0	MH
TP-5	59	31	28	100.0	84.4	83.8	34.3	MH
TP-8	61	32	29	100.0	82.5	86.8	32.8	MH

^a Standard Dry Density/Moisture Relationship Determination (Proctor): ASTM D698

Based on the findings, we expect excavations to generate soil of varying quality. When excavating in the filled areas, segregating suitable soil may be difficult whereas in areas of natural (residual) soil, more consistent conditions should be expected. From the testing above, much of the soil on the site classified as an elastic silt. MH soils tend to sensitive to changes in moisture and may lose strength on becoming wet. During dry conditions the MH soil may appear to perform well, but may destabilize after becoming wet, especially with repeated crossing of construction equipment. Maintaining good site drainage and limiting excavation size whenever possible will assist in protecting the subgrade of the crypts. Possible stabilization techniques could include treating with cement, placing crushed stone and/or textile or other alternative.

Generally, the elastic silt would be considered unsuitable for use as controlled fill. However, in some circumstance, when more suitable borrow soil is not available, the soils can be managed to reduce the potential impacts on the construction schedule and cost. The URS Geotechnical Report for the site indicated other soil at the site classified as moderately plastic clay (CL) and clayey sand (SC). The contractor may have to selectively excavate these soils from the filled areas to avoid the organic debris contained in those areas. The CL and SC soils will make more suitable backfill materials for controlled fill, especially if the overall thickness of fill is limited to 2 feet or less.


In order to manage the soil conditions at the site, we recommend placing six inches of compacted, dense-graded base (Mineral Aggregate Base, Class A, Grading D crushed stone (TDOT Specifications, Section 303, Subsection 902.05) across the bottom of the excavation between the drainage layer and soil subgrade. The stone should be compacted to 95% of the maximum dry density as determined by the Modified maximum dry-density/moisture relationship per ASTM D1557. During the seasonally wetter periods of the year (November through April), crusher-run stone or other similarly graded stone may be used. Cement-treated base (CTB) stone would also be acceptable for this purpose. In the event continued wet weather impacts construction schedule, CTB will provide a working surface with a shorter dry weather window. We would suggest arranging unit pricing for CTB either as an alternate or unit-price arrangement.

Soil fill used as cover over and around the perimeter of the crypt field should consist of select soil fill materials. Acceptable soil types for select fill include SM, SW, SC, CL, ML and CH (with a Liquid Limit less than 60). Excluded soil types include MH and CH (with a LL equal to or greater than 60), GW, SP, and GP.

Please let us know if you have any questions regarding the information provided or need additional information.

Sincerely,
Terracon Consultants, Inc.

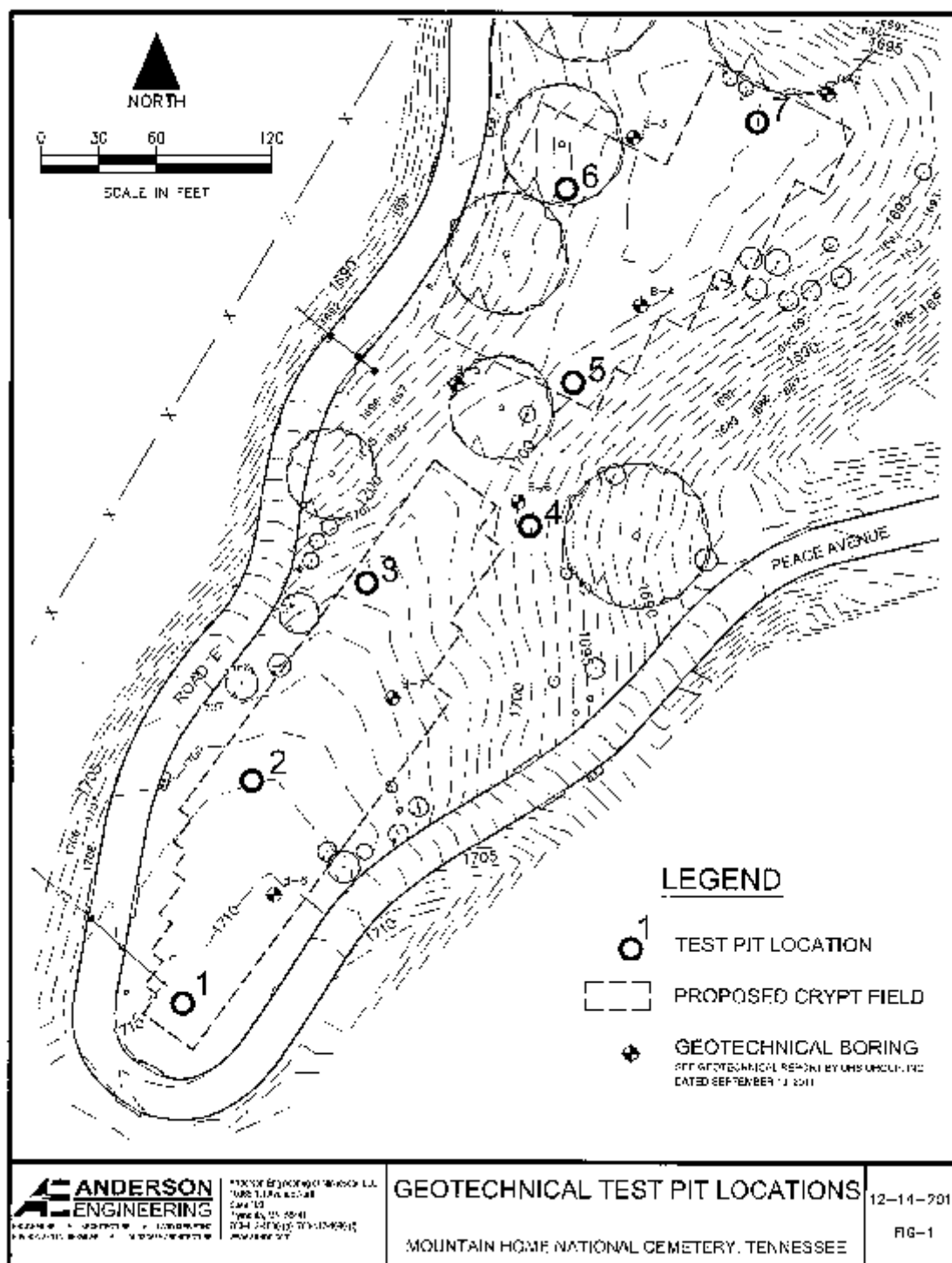

John R. Reinert, P.G.
Project Geologist

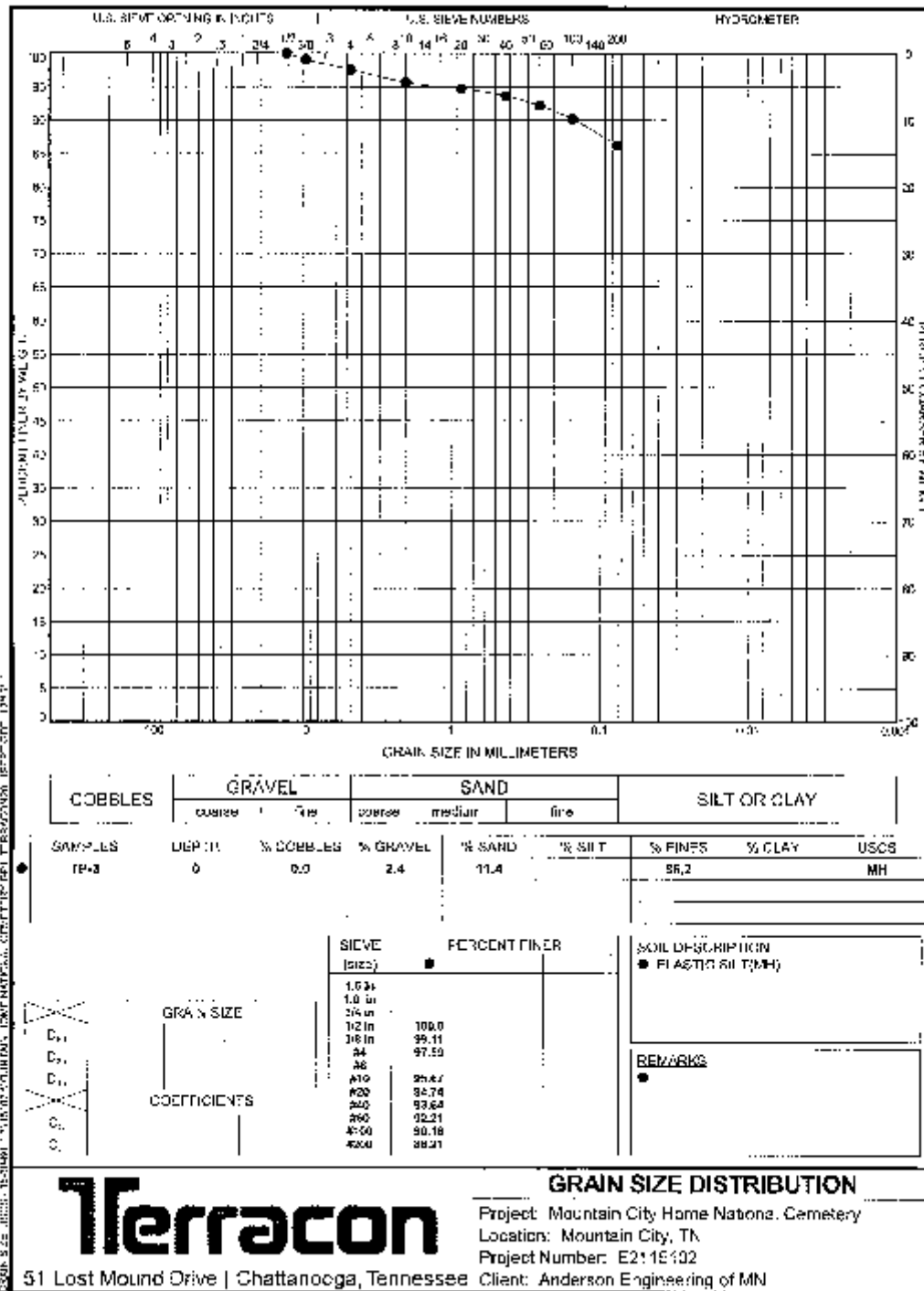

Derek L. Hednett, P.E., P.G.
Chattanooga Office Manager

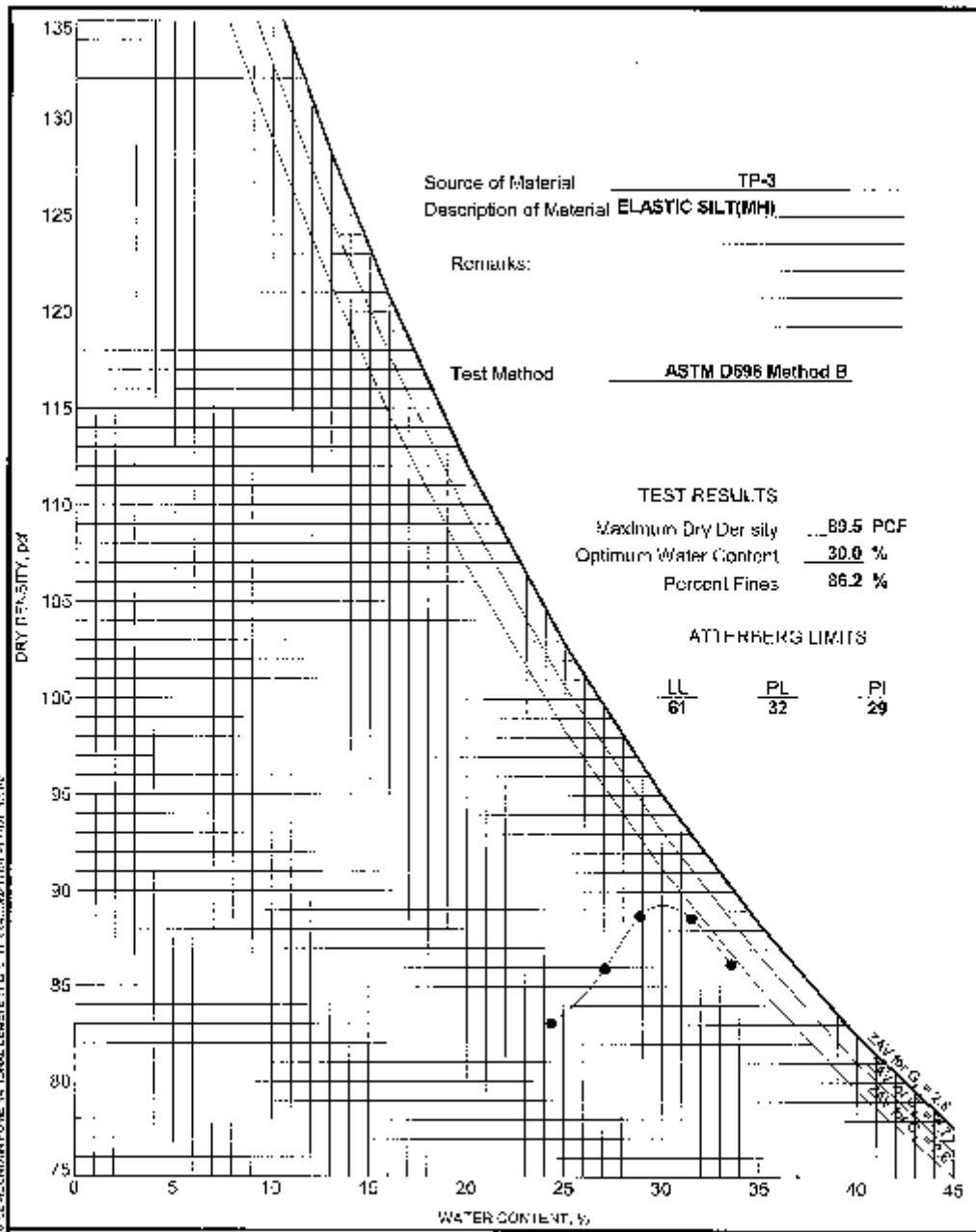
Attachments: Figure 1, Geotechnical Test Pit Location Plan
Results of Laboratory Testing

DLH:s

Responsive • Resourceful • Reliable







DATA SOURCE: 05 E2116102 MOUNTAIN HOME NATIONAL CEMETERY (U.S. 11) 3/20/2021 DEPT. OF TRANSPORTATION

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51 Lost Mound Drive | Chattanooga, Tennessee

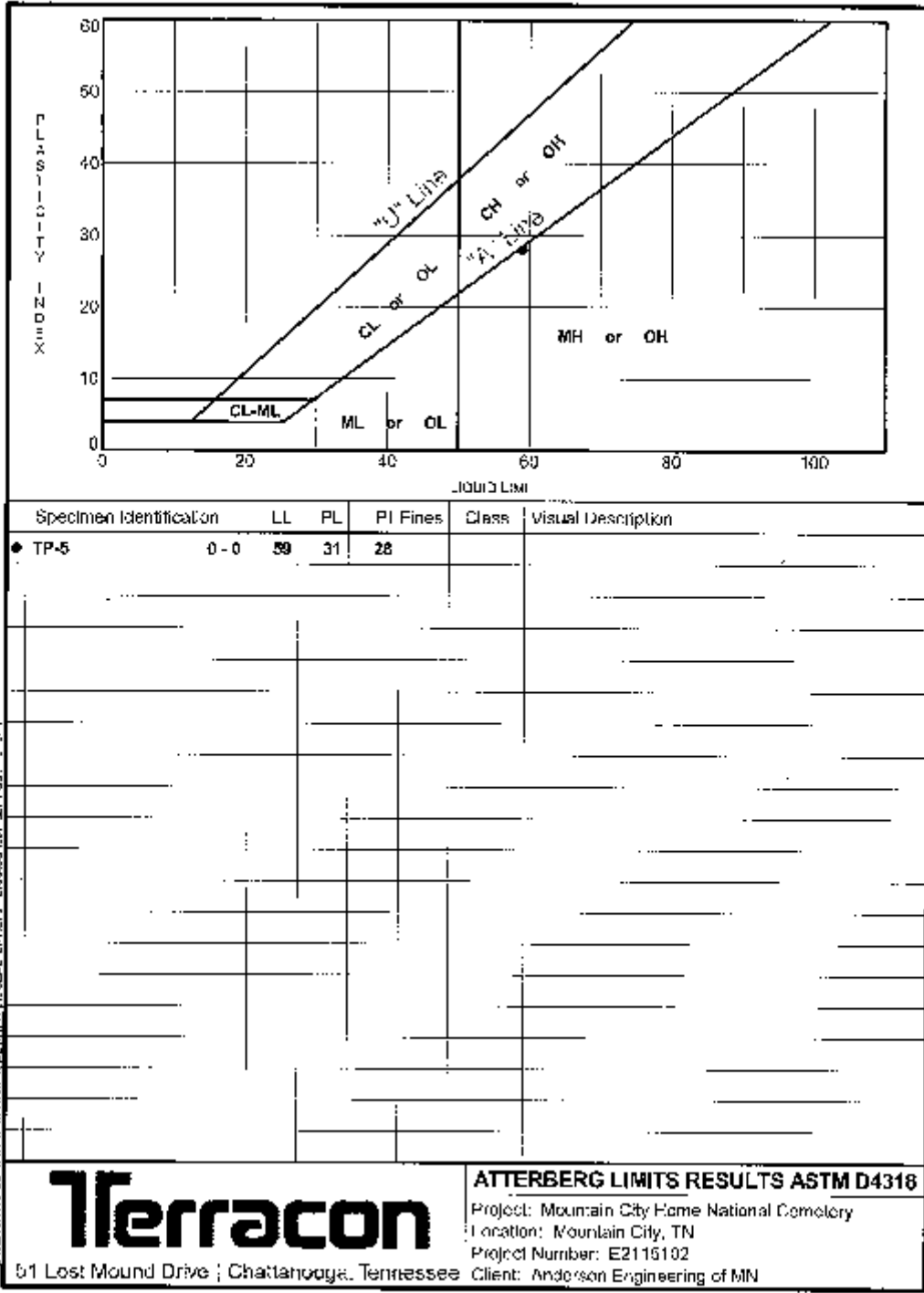
MOISTURE-DENSITY RELATIONSHIP ASTM D698/D1557

Project: Mountain City Home National Cemetery

Location: Mountain City, TN

Project Number: E2116102

Client: Anderson Engineering of MN

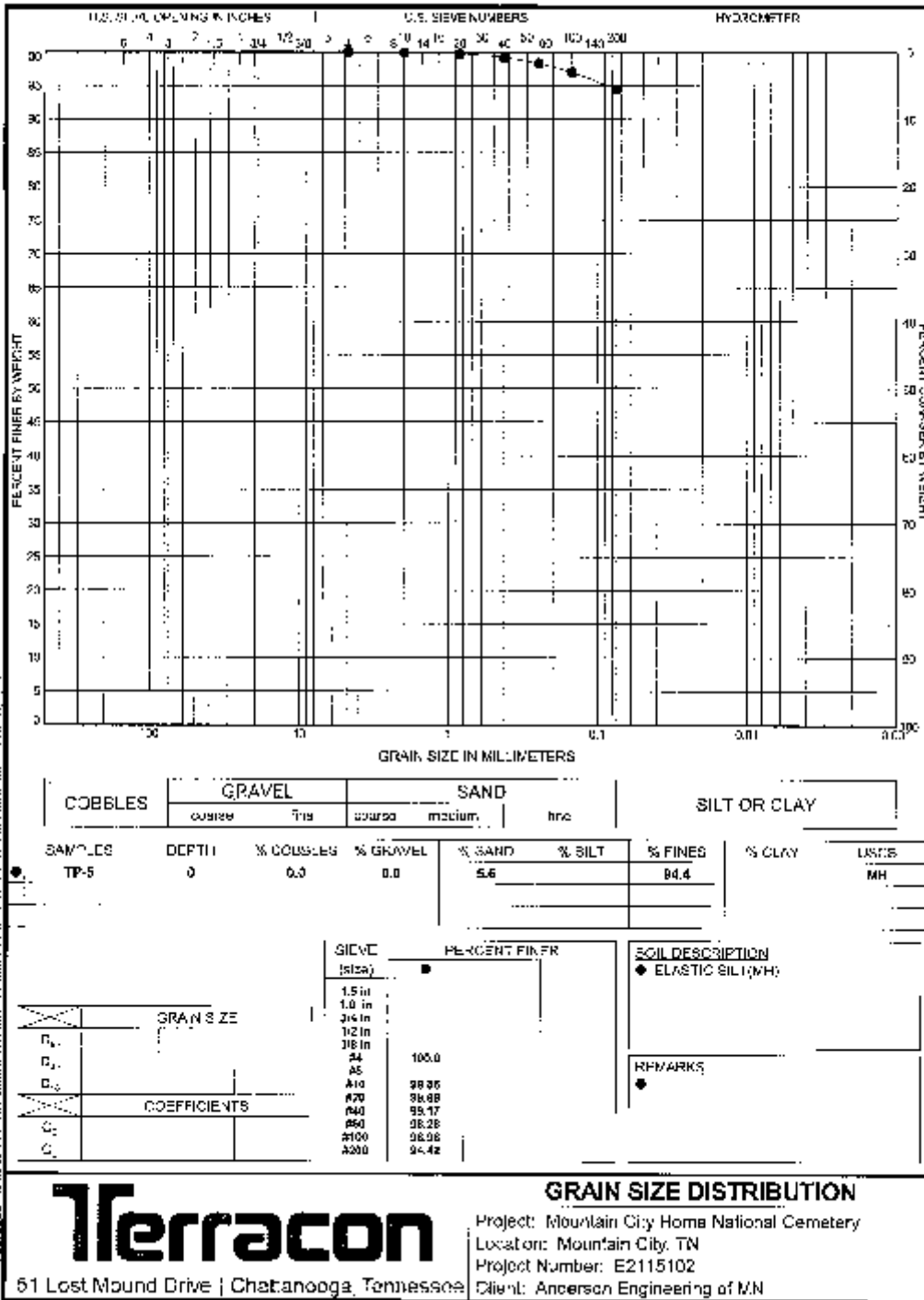


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51 Lost Mound Drive | Chattanooga, Tennessee

ATTERBERG LIMITS RESULTS ASTM D4318

Project: Mountain City Home National Cemetery
Location: Mountain City, TN
Project Number: E2115102
Client: Anderson Engineering of MN



Terracon

51 Lost Mound Drive | Chattanooga, Tennessee

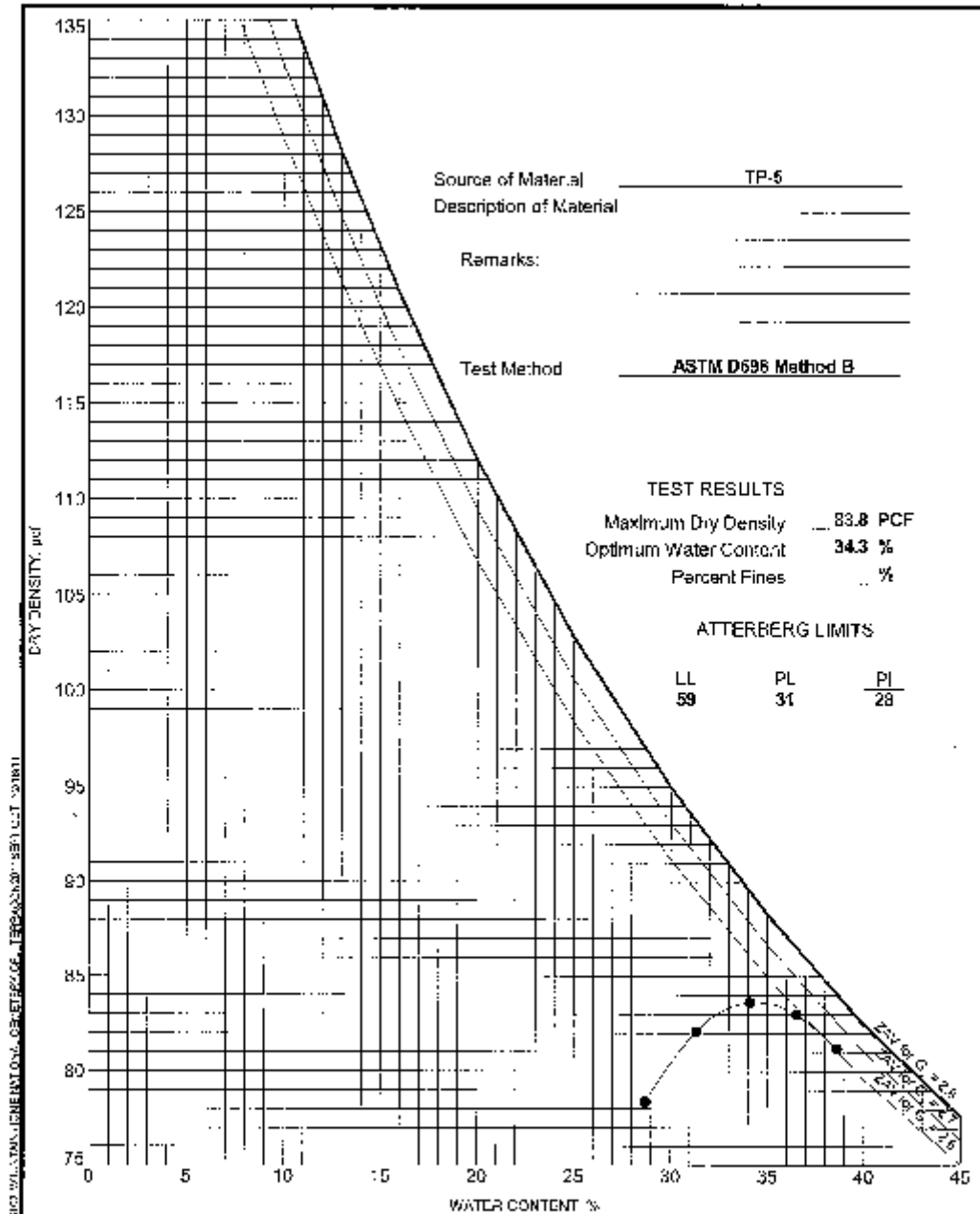
GRAIN SIZE DISTRIBUTION

Project: Mountain City Home National Cemetery

Location: Mountain City, TN

Project Number: E2115102

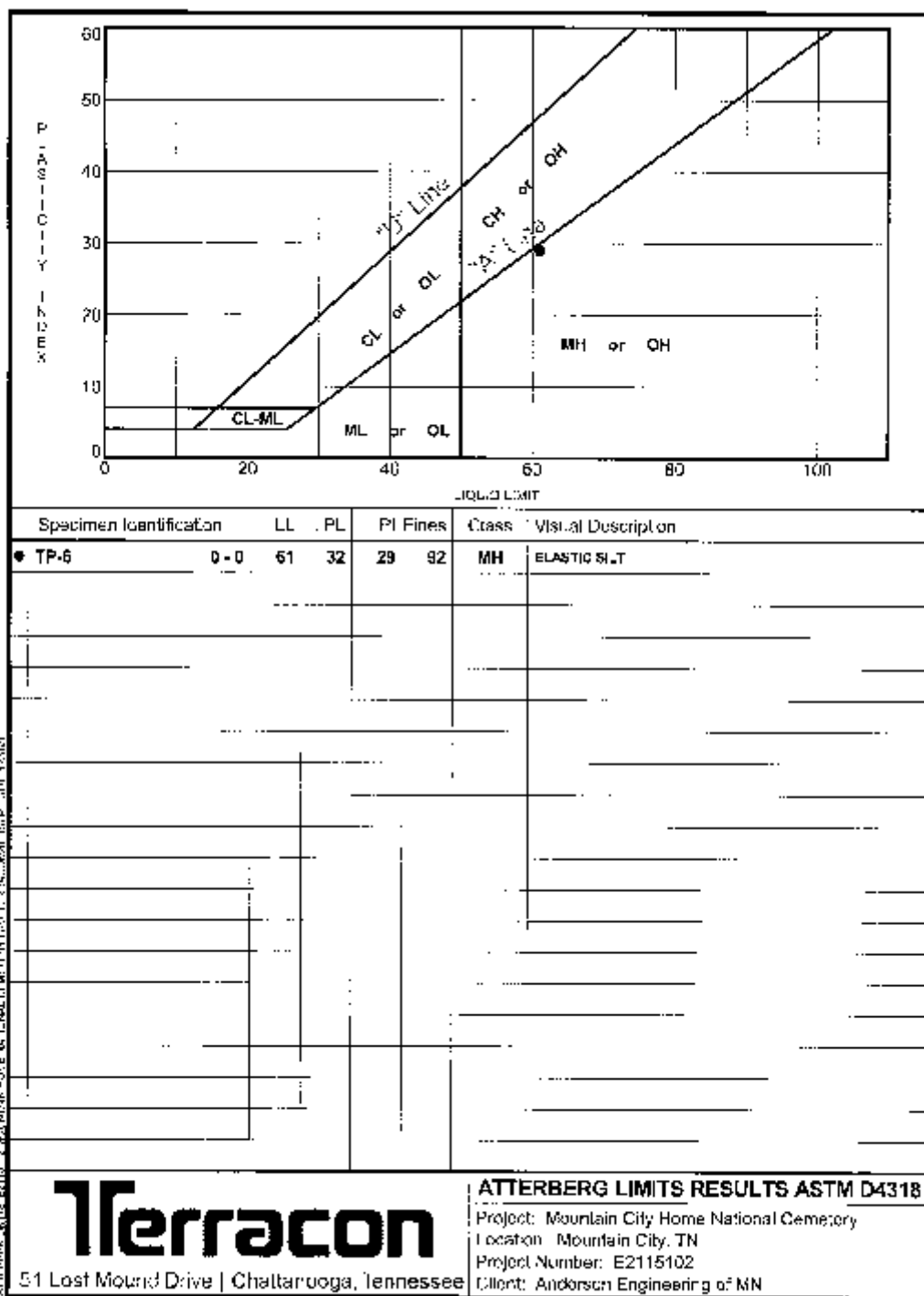
Client: Anderson Engineering of M/N



51 Lost Mound Drive | Chattanooga, Tennessee

MOISTURE-DENSITY RELATIONSHIP ASTM D698/D1557

Project: Mountain City Home National Cemetery
 Location: Mountain City, TN
 Project Number: E2115102
 Client: Anderson Engineering of MN



ATTENBERG LIMITS RESULTS ASTM D4318

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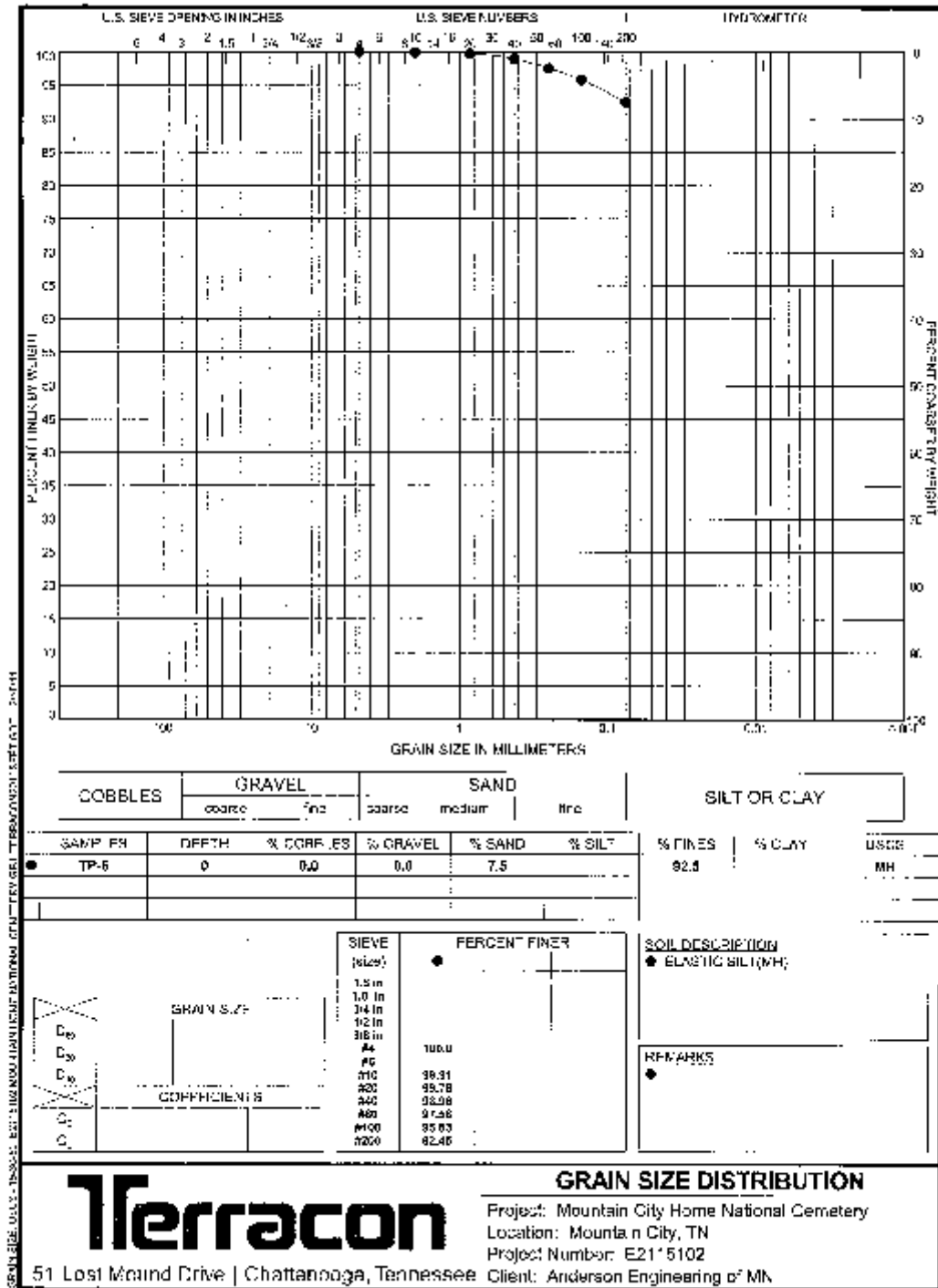
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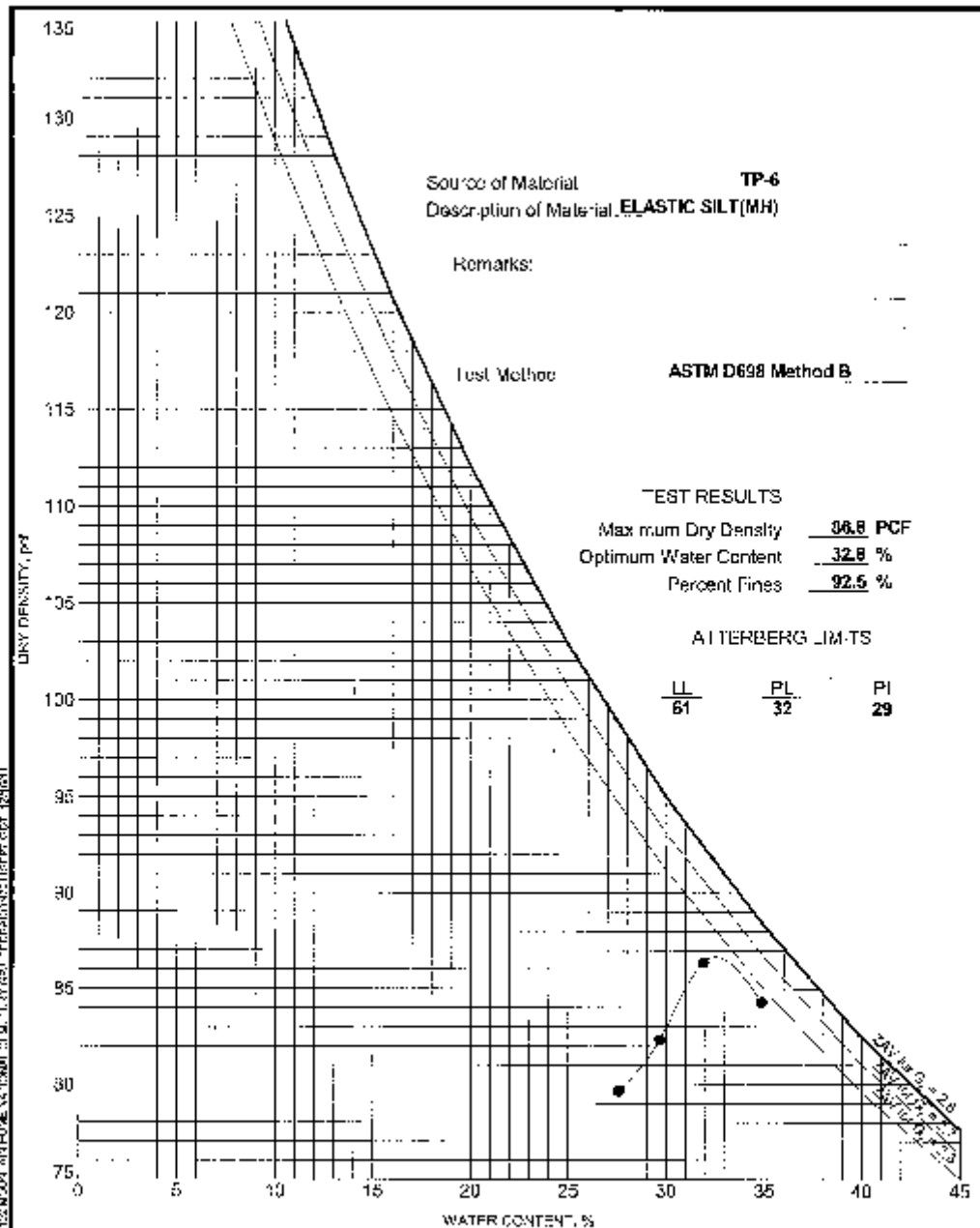
Project: Mountain City Home National Cemetery

Location: Mountain City, TN

Project Number: E2115102

Client: Anderson Engineering of MN





Terracon

MOISTURE-DENSITY RELATIONSHIP ASTM D698/D1557

Project: Mountain City Home National Cemetery

Location: Mountain City, TN

Project Number: E2115102

Client: Anderson Engineering of MN

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